

REMARKS

The Applicant appreciates the Examiner's quick and courteous Action.

Claims 1-33 are pending in the application. Claims 1-33 stand rejected. Claims 1, 4, 7-9, 12, 14-20, 22, 25, 27, and 29-33 are amended herein. No new matter is added.

The Applicant respectfully requests reconsideration in view of the following remarks.

Rejection Under 35 U.S.C. §102 over Awbrey, et al. in view of Ohsol and Stoesser

The Examiner has rejected claims 1-33 under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Pat. No. 5,080,779 to Awbrey, et al. in view of U.S. Pat. No. 4,938,876 to Ohsol in view of U.S. Pat. No. 2,175,095 to Stoesser.

With regard to claims 1-8 and 21-26, the Examiner finds that Awbrey, et al. discloses a method, a composition and emulsion for removing metals from a hydrocarbon phase to a water phase involving adding between about 9.90 ppm to about 59.40 ppm of a chelating agent (e.g. N-2-hydroxyethylethylenediaminetriacetic acid) and water to an emulsion of hydrocarbon and water and separating the emulsion into a hydrocarbon phase and an aqueous phase containing at least a portion of the metals.

The Examiner admits that Awbrey, et al. does not disclose where the chelating agent is glycolic acid and does not disclose where a mineral acid is added to lower the pH of the wash water to 6 or below.

However, the Examiner finds that Ohsol discloses where the chelating agent is glycolic acid, and that glycolic acid is used to remove metal contaminants from oil into a water phase.

Therefore, the Examiner contends that it would be obvious to one having ordinary skill in the art at the time of the invention to modify the invention of Awbrey, et al. to include where the chelating agent is glycolic acid in order to remove metal contaminants from oil into a water phase.

The Examiner further finds that Stoesser discloses where a mineral acid solution containing glycolic acid has a pH between about 2.7 and 5.4, and that a

mineral acid solution containing glycolic acid can maintain iron in solution at a pH of between 2.7 and 5.4.

Therefore, the Examiner additionally alleges that it would be obvious to one having ordinary skill in the art at the time of the invention to modify the invention of Awbrey, et al. to include where a mineral acid solution containing glycolic acid has a pH between about 2.7 and 5.4 in order to maintain iron in solution.

The Applicants would respectfully traverse.

To support an obviousness rejection, the Examiner has the initial burden of establishing a *prima facie* case of obviousness of the pending claims over the cited prior art, *In re Oeticker*, 977 F.2d 1443, 1445; 24 U.S.P.Q.2d 1443 (Fed. Cir. 1992). Applicants respectfully submit that the Examiner has not established a *prima facie* case of obviousness of the claims herein, as amended, as will be established.

The Examiner's attention is respectfully directed to independent method claims 1, 7, 22, and 25 which have been amended to further define that the method is one "in a refinery desalting process". Support for this language is found in dependent claims 4 and 8 and in the title, paragraphs [0003]-[0005] on pages 2-3 of the application as originally filed and elsewhere and thus does not constitute an improper insertion of new matter. Dependent claims 4 and 8 have been amended to remove redundant language.

The Examiner's attention is additionally respectfully directed to independent method claims 1, 7, 22, and 25 which have been amended to recited that the composition herein (e.g. glycolic acid) is added to a wash water, and that the wash water is in turn added to *crude oil* to create an emulsion, which is resolved into hydrocarbon phase and an aqueous phase using *electrostatic coalescence*. Support for this language is found in paragraphs [0005]-[0006] on pages 2-3, paragraphs [0018]-[0019] on page 8, paragraph [0028] on pages 10-11, paragraph [0035] on pages 13-14 of the application as originally filed and elsewhere and thus these amendments do not constitute improper insertions of new matter.

The Examiner's attention is further respectfully directed to independent composition claims 9, 12, and 27 where water is now recited as a component of the composition. The addition of water as a component also does not constitute an improper insertion of new matter to these claims because water is present as a solvent, or present when the active component (e.g. glycolic acid) is added to the wash water; please see paragraph [0030] on page 12 of the application as originally filed.

Finally, the Examiner's attention is respectfully directed to emulsion claims 14-20 and 29-33 where the hydrocarbon is further defined as *crude oil*. Support for this change is found in numerous places in the application as filed (please see particularly those noted above with respect to the amendments to the method claims), and thus these changes also do not constitute an improper insertion of new matter.

By the above amendments, the Applicants are focusing and specifying the claims to be applicable to compositions for and methods of transferring metals and/or amines from a hydrocarbon phase to a water phase, where the hydrocarbon phase comes from *crude oil*, and the method involves a *refinery desalting process* using *electrostatic coalescence*. Awbrey, et al. involves a desalting system using an electric field. Applicants respectfully submit that Stoesser and Ohsol are not related to such systems or emulsions and are not properly cited herein or merged with Awbrey, et al. Indeed, as will be established, Stoesser and Ohsol are non-analogous art relative to the claimed invention, as amended.

With respect to Ohsol, this reference does not involve refinery desalting processes using electrostatic coalescence, or the treatment of crude oil, but rather methods for separating oil and water *waste oil* emulsions. The Examiner's attention is respectfully directed to column 1, lines 1-7 therein:

The invention relates to the purification and separation of oil, water and solids from *waste oil*. This *waste oil* can be found in many forms and is particularly found in large quantities as storage tank bottoms and in lagoons where waste oil has historically been transferred for storage. (Emphasis added.)

The Ohsol emulsions contain 5 to 80% water (column 4, lines 59-62) filled with solids such as inorganic salts, dirt, etc. (column 1, lines 43-47, and column 4, lines 13-23). Ohsol concerns a process to clean up slop oil or waste oil by the use of centrifuges (continuous centrifuge 42; please see column 7, lines 5-30; column 10, lines 43-46; claim 39; all Examples and the FIG.) and hydrocyclones (please see column 3, lines 59-63; hydrocyclones 28 and 29; please see column 6, line 42 to column 7, line 4; and the FIG.).

The crude oils treated and separation methods and compositions recited in the claims as amended herein are different from the waste or slop oils addressed in Ohsol and the separation techniques disclosed therein. Particularly with respect to the method claims the composition (e.g. glycolic acid) is added to wash water (not an emulsion as in Ohsol), this water is then added to *crude oil* (not slop oil or waste oil) and an emulsion is created and the emulsion is resolved using *electrostatic coalescence* to remove the metals and/or amines. The methods claimed herein do not involve slop oil or waste oil emulsions or a method for separating such emulsions using centrifuges and hydrocyclones. Further, the emulsions herein relate to crude oil, not to slop oil or waste oil.

Applicants respectfully submit that because Ohsol and Awbrey, et al. are different processes, there is no motivation for one having ordinary skill in the art to consider combining the disclosures therein.

"The mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification." *In re Gordon*, 733 F.2d 900, 902, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984) cited in *In re Mills*, 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990), in turn cited by MPEP §2143.01. A reason, suggestion or motivation to combine the teachings of the references must be present to support a *prima facie* rejection of obviousness. *Alza Corp. v. Mylan Laboratories, Inc.* 391 F.3d 1365, 1372-1373 (Fed. Cir. 2004).

"Our reviewing courts have often advised the Patent and Trademark Office that it can satisfy the burden of establishing a *prima facie* case of obviousness *only* by showing some objective teaching in either the prior art, or knowledge gen-

erally available to one of ordinary skill in the art, that 'would lead' that individual 'to combine the relevant teachings in the references.' Accordingly, an examiner *cannot* establish obviousness by locating references which describe aspects of a patent applicant's invention without *also providing evidence of the motivating force which would impel one skilled in the art to do what the patent applicant has done.*" [Citations omitted; emphasis added.] *Ex parte Levengood*, 28 U.S.P.Q.2d 1300, 1302 (B.P.A.I. 1993).

Applicants respectfully submit that herein there is no reason, suggestion or motivation to combine the teachings of the references, and in particular no evidence of the motivating force which would impel one skilled in the art to do what the Applicants have done. Further, Applicants respectfully submit that one of *ordinary* skill in the art seeking to improve the Awbrey, et al. would not look to Ohsol which does not disclose anything useful about *desalting systems for crude oil*, but rather only addresses separating waste oil or slop oil emulsions using centrifuges and hydrocyclones – not desalters.

With respect to the composition claims as amended herein (9-11 and 27-28) and emulsion claims as amended herein (15-17 and 30), as well as the method claims involving the use of mineral acid (2-4, 8, 23, and 30), Applicants respectfully submit that Ohsol does not recognize the important nature of pH taught in Applicants' methods and compositions. The pH is important to the partitioning of counter-ions, such as naphthenic acid, out of the water and into a protonated form that releases the metal species. The pH is also important to liberate the metal from the organometallic species present in the system. The claimed compositions (chelating agents) have to be able to displace the original chelating agent on the metal (usually present) in the crude oil, and pH is an important driver of this process. Please see paragraph [0028] on pages 10-11 of the application as filed.

The Examiner would look to Stoesser for a disclosure of a mineral acid solution containing glycolic acid. However, Applicants respectfully submitted that Stoesser is even further afield from the claimed methods, compositions and emulsions herein than is Ohsol. Stoesser concerns the prevention of scale precipitation

while acidizing wells, that is, preventing precipitation of iron or aluminum hydrate; please see column 2, lines 45-48: "The agents suitable to add to the acid solution to prevent the precipitation of either iron or aluminum hydrate at their normal pH values are those compounds, usually organic, which form complexes of iron or aluminum ...". The metals come from the inorganic rocks of the formation that are being dissolved by the acid: "In attempts to raise the output of such wells, it is usual to treat them by introducing into the well and thence into the formation a charge of hydrochloric acid to dissolve calcareous matter in the formation, whereby its permeability to the flow of fluids is increased." (column 1, lines 7-12). Contact with crude oil is incidental and not part of the Stoesser method or compositions therein. The metal species are saturated or supersaturated in the Stoesser method, whereas in the Applicants' methods and emulsions the metal species are much more typically below the concentration limits. Indeed, there is no hydrocarbon phase in Stoesser, and thus there can be no transferring of metals and/or amines from a hydrocarbon phase to an aqueous phase. For all of these reasons, Applicants respectfully submit that Stoesser is inappropriately cited and that the disclosure of Stoesser cannot be properly combined with that of Awbrey, et al. for the same reasons that the disclosure of Ohsol cannot be properly combined with that of Awbrey, et al.

Indeed, the Stoesser well treatment to prevent scale precipitation is not technology that anyone concerned with transferring metals and/or amines from a hydrocarbon phase to a water phase in a desalting operation would consider. As the Examiner discloses, the Stoesser method can maintain iron in solution – but discloses nothing about transferring metals and/or amines from a hydrocarbon phase to a water phase in a desalting operation using *electrostatic coalescence*. Stoesser is the kind of reference that would be found in a search for "glycolic acid" and a particular pH range, but one having *ordinary* skill in the art trying to improve the Awbrey, et al. two-stage desalting method would not be motivated to consider the Stoesser disclosure from 1939 relating to a completely different technical problem (or Ohsol either for that matter), Applicants respectfully submit. Stoesser is only concerned with keeping certain metal compounds in solution, and dis-

closes, suggests or hints nothing about transferring metals and/or amines from one phase to any other phase. Further, neither Stoesser nor Ohsol teach, disclose, or suggest anything about treating crude oil in a refinery desalting process. Applicants respectfully submit that Stoesser and Ohsol are non-analogous art.

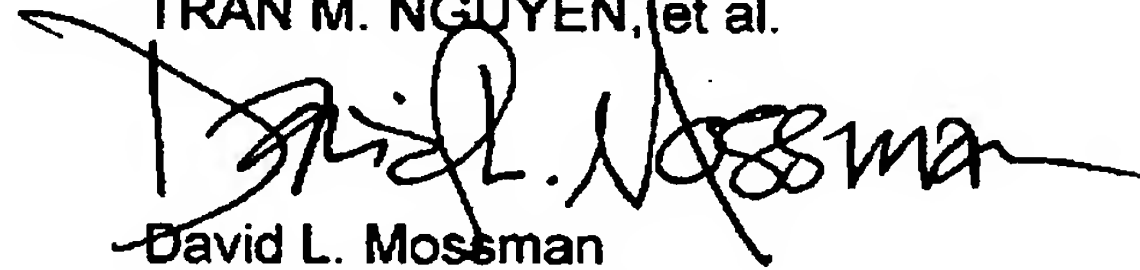
If the teaching is outside the art area, it must be shown that a person of ordinary skill would have considered it. *Ex parte Murphy and Burford*, 217 U.S.P.Q. 479, 482 (Bd. of App., 1982). Non-analogous art is not properly prior art; the examiner cannot pick statements out of their proper context. *In re Pagliaro*, 657 F.2d 1219, 1225; 210 U.S.P.Q. 888, 892 (C.C.P.A. 1981). Applicants respectfully submit that there is nothing of record that shows that a person of *ordinary* skill would have considered either Stoesser or Ohsol in facing the technical problem addressed and solved by the Applicants. The methods and compositions of these secondary references are too different and too far afield from the instant invention as recited in the amended claims.

For all of these reasons, Applicants respectfully submit that the Examiner has not made a *prima facie* case of obviousness for the claims as amended over the art cited. Reconsideration is respectfully requested.

Further, Applicants are particularly confused by the Examiner's statement: "Awbrey, et al. discloses a method, a composition and emulsion for removing metals from a hydrocarbon phase to a water phase involving adding between about 9.90 ppm to about 59.40 ppm of a chelating agent and water to an emulsion of hydrocarbon and water." Applicants find in Awbrey, et al.'s Table II of column 7 mention of 9.90 ppm Fe in the raw crude treated with *conventional* emulsion breaker A in Example 1. However, Applicants and Applicants' attorney have been unable to find any reference in Awbrey, et al. to a value of "59.40 ppm" for any material, whether a metal in the crude much less a chelating agent, conventional or otherwise. Applicants respectfully request the Examiner to be more explicit and specific with this reference to Awbrey, et al. so that Applicants may properly address it.

It is respectfully submitted that the arguments presented above overcome the rejection. Reconsideration and allowance of the claims are respectfully requested. The Examiner is respectfully reminded of his duty to indicate allowable subject matter. The Examiner is invited to call the Applicants' attorney at the number below for any reason, especially any reason that may help advance the prosecution.

Respectfully submitted,
TRAN M. NGUYEN, et al.



David L. Mossman
Registration No. 29,570
Attorney for Applicant
Telephone No. 512/219-4026

Madan, Mossman & Sriram P.C.
Suite 700
2603 Augusta
Houston Texas 77057-5662